Chemical Analysis of Private Water Supplies

The DHSS laboratory may provide analytical support to both state and local environmental staff members, as well as to the general public. Because of the limitations of time and staff, some of the support may be restricted. The public may directly request analysis for nitrates and fluoride. All other requests for analysis must be submitted by a health official. Analysis of samples for volatile organics, herbicides, and insecticides requires substantial laboratory preparation and analysis time, or the expense of utilizing a contract laboratory. Requests for these services should be made through the Assessment Group of Bureau of Environmental Epidemiology (BEE).

The analyses that the State Public Health Laboratory performs include:

- Inorganic Analysis, such as metals, minerals, nitrates, and physical parameters
- Radioactivity, such as gross alpha, gross beta, and Radium-226
- Semi-Quantitative Analysis for Other Herbicides, Insecticides, and Miscellaneous Chemicals
- For a complete list of analyses performed, detection limits, and water quality standards, please consult with the Chemistry Unit of the laboratory.

Inorganic Analysis

Testing is available for metals, metalloids, perchlorate common ions, pH, total dissolved solids, alkalinity, and hardness. The most common analyses performed are for nitrates and fluoride.

Samples are to be collected in quart cubitainers, which may be obtained from DHSS laboratory. One quart is a sufficient volume regardless of the number of inorganics, unless mercury is requested. If mercury analysis is desired along with other inorganics, collect two cubitainers of water. If both metals and non-metal tests are requested, the laboratory prefers the sample to be split between two cubitainers, even though one quart of water is sufficient. Each subsample should contain at least one-half quart of water.

There are several different holding times (listed below) for inorganics. Be aware of these holding times before sampling, to avoid being forced to re-collect samples. Because of short holding time, samples for TDS should be collected early in the week, and the samples sent promptly to the laboratory.

Inorganic	***Holding Time***
Total Dissolved Solids	7 days
Sulfate; Chloride; Alkalinity; and Nitrate	14 days
Mercury	28 days
Fluoride	30 days
Hardness; *Metals and Metalloids (except mercury)*	6 months

Sampling procedure

In most circumstances, the faucet or hydrant closest to the well should be the collection point. Make sure there is no filtration unit between the well and the collection point, unless you are testing the efficacy of the filtration unit. Always collect cold water, unless you are looking for a problem with the hot water heater.

Flush the faucet or hydrant before collecting a sample. The water should run until the pH, temperature, and conductivity stabilizes. If you are without the instruments to check for stabilization, 5 minutes is generally sufficient to remove any water that has been standing in the system. The sample sheet should be filled out while flushing the casing, or immediately after sample collection.

Label the cubitainer before filling. Unscrew the lid, and expand the cubitainer by pulling the two walls apart. Do not inflate the cubitainer by blowing into it. This may contaminate the container (and the sample). Be careful not to touch the bottom of the sample lid, or the inside of the cubitainer. Rinse the inside before filling. Pull up on the neck of the cubitainer until it "pops" and stays in the "up" position. Fill the cubitainer by holding it under the flowing water. Leave a small volume of air inside the cubitainer (head space) and screw the lid on tightly.

Transport or ship promptly to the laboratory. Samples for metals must be received in the laboratory within two weeks.

Pesticides, Herbicides, Volatile Organics and Radioactivity

Contact BEE Assessment Group for assistance.

Semi-Quantitative Analysis

The laboratory has the ability to test for certain other contaminants using ELISA immunoassay technology. At this time, it takes about two weeks for the laboratory to order the "kits" and do the other necessary work. These kits can analyze 10 samples, and have a finite shelf life. This makes this analysis more conducive to special projects than emergency situations.